CLAIM AMENDMENTS

1. (Currently amended) A building sequence planning system for an automobile production line, said system comprising:

an input unit for inputting vehicle information of vehicles to be manufactured,

a processing unit for deciding an optimum building sequence based on the vehicle information inputted through said input unit, and

an output unit for externally outputting a building sequence schedule decided by said processing unit,

wherein said automobile production line is a mixed line including a first line and a second line respectively in parallel, and a third line branching from said first line and joining with said first line or said second line,

wherein said processing unit includes

an initial offline sequence preparing unit for preparing an initial vehicle building sequence of the automobile based on the vehicle information inputting said input unit,

an initial lead-time developing unit for developing the building sequence ~~at a point in the automobile production line between two processes in~~ to preceding and succeeding processes by a lead-time shifting for the automobile production line ~~based on~~ prepared by the initial vehicle building sequence prepared by said initial offline sequence preparing unit, ~~wherein said point in the automobile production line corresponds to an assembly completion point,~~

a sequence evaluating unit for evaluating the building sequence

based on conditions of an occupancy rate level, a minimum ~~internal~~ interval vehicle number, a maximum succeeding vehicle number, and a lot condition, as a penalty value, in accordance with restriction conditions,

an offline point sequence preparing unit for preparing another pattern of the vehicle building sequence ~~in an~~ at the offline ~~process~~ point,

a lead-time developing unit for developing the building sequence at the offline point for another pattern of the vehicle building sequence prepared by said offline sequence preparing unit by using a lead-time shifting by employing the number of vehicles residing or accumulated between two processes, and

an evaluation determining and storing unit for deciding a building sequence with a minimum penalty based on the penalty value evaluated by said sequence evaluation unit,

wherein said processing unit propagates the building sequence in a point in the automobile production line between two processes in the automobile production line, which corresponds to an assembly completion point, to preceding and succeeding processes with lead-time shifting by employing the number of vehicles residing or accumulated between two processes, thereby deciding an optimum building sequence for each of the preceding and succeeding processes, and

wherein said sequence evaluating unit evaluates the building sequence for the mixture line, which is prepared by said initial lead-time developing unit, as a penalty value based on a sum of satisfying degrees, at all the points where the lead-time shifting has been done.

2-3. (Canceled)

4. (Previously presented) A building sequence planning system for an automobile production line according to Claim 1,

wherein, in a mixed line including branches and joints, said lead-time developing unit calculates a different lead time for each vehicle by employing the number of vehicles residing or accumulated between two processes, and propagates the building sequence to preceding and succeeding processes with lead-time shifting, thereby deciding the building sequence for each of the preceding and succeeding processes.

5. (Previously presented) A building sequence planning system for an automobile production line according to Claim 4,

wherein, for a vehicle which has to pass a line twice because of work for two-tone color painting, the lead time is modified by adding a time or the number of vehicles.

6-12. (Canceled)

13. (New) A process of operating a processing unit of a building sequence planning system for an automobile production line, said system comprising an input unit for inputting vehicle information of vehicles to be manufactured, a processing unit for deciding an optimum building sequence based on the vehicle information inputted through said input unit, and an output unit for externally

outputting a building sequence schedule decided by said processing unit, the automobile production line being a mixed line including a first line and a second line respectively in parallel, and a third line branching from said first line and joining with said first line or said second line, the process comprising:

preparing an initial vehicle building sequence of the automobile based on the vehicle information inputted,

developing the building sequence to preceding and succeeding processes by a lead-time shifting for the automobile production line prepared by the initial vehicle building sequence prepared,

evaluating the building sequence based on conditions of an occupancy rate level, a minimum interval vehicle number, a maximum succeeding vehicle number, and a lot condition, as a penalty value, in accordance with restriction conditions,

preparing another pattern of the vehicle building sequence at an offline point,

developing the building sequence at the offline point for another pattern of the vehicle building sequence prepared by said offline sequence preparing unit by using a lead-time shifting by employing the number of vehicles residing or accumulated between two processes, and

deciding a building sequence with a minimum penalty based on the penalty value evaluated,

propagating the building sequence in a point in the automobile production line between two processes in the automobile production line, which corresponds to an assembly completion point, to preceding and succeeding processes with

lead-time shifting by employing the number of vehicles residing or accumulated between two processes, thereby deciding an optimum building sequence for each of the preceding and succeeding processes, and

evaluating the building sequence for the mixture line as a penalty value based on a sum of satisfying degrees, at all the points where the lead-time shifting has been done.